Neill Taylor G4HLX, the PW 144MHz QRP Contest organiser enjoys outdoor Amateur Radio. This time he’s been sampling the latest offering from Icom during a picnic and portable excursion!

The latest addition to the growing range of small h.f. transceivers is the little IC-703 from Icom. The transceiver is ‘little’ in the sense that it’s lightweight, low power and physically quite small, as well as being comparatively low cost. However, as I found out on the air, the IC-703 is certainly not a little rig when it comes to features, and holds up pretty well against ‘the big boys’ in transmit and receive performance!

The IC-703 easily-portable transceiver is bound to look attractive to those who like to take their Amateur Radio beyond the shack and the car. In particular I think it will appeal to ‘back-packers’, climbing to hilltops or other exotic locations on foot. It will also find a home in the shack of a QRP enthusiast, working fine as a base station, and in particular I think it will appeal to holders of a Foundation Licence.

What’s In The Box?
Right...now I’ll answer the question...”What’s in the box for you”? On arrival you’ll find that the IC-703, heading photograph, provides (in a box measuring about 220 x 170 x 60mm and weighing under 2kg) coverage of all h.f. bands plus 50MHz.

The transceiver has 10W transmit power output on s.s.b., c.w., f.m. or data modes, and 4W on a.m. It also includes a general coverage receiver with a tuning range from 30kHz to 60MHz. Additionally, the transceiver has a built-in auto antenna tuning unit (a.a.t.u.) and digital signal processing (d.s.p.) as standard. In short, add an antenna and a power supply or battery, and you have a complete and highly portable station. The optional carry bag makes this even easier.

In appearance, the IC-703 looks very like the older and well-established IC-706 series. In fact, the front panel is entirely identical with the IC-706 MkIIG (apart from the name IC-703!). The functionality of these two transceivers is very similar, too, with the IC-703 menu system, etc., very much like that of its older cousin. However, there’s no doubt that the IC-703 has been designed with portable operation in mind!

For example, the designers have worked hard keeping current consumption low to preserve battery life. Basing its functionality on the IC-706 seems like a good idea, given how popular the 706 continues to be, some eight years after the first model was launched.

As an all-in-one low power rig

![An inside view of the IC-703 transciever.](image)
for the QRP enthusiast or Foundation Licensee, the IC-703 seems to provide everything you need. Except that is...for coverage of the 144 and 432MHz bands. This is an unfortunate omission, in my opinion, although I'm glad they managed to squeeze 50MHz into the box though.

Neill Impressed!
I was keen to try out this little transceiver on the air, and when I powered it up for the first time I was at once impressed...it didn't have a 'small rig' feel or sound. Tuning in some SSB stations on 14MHz, I found the audio through the internal speaker to be full and clear.

The large tuning knob is comfortable, although there are two settings of dial tension, and I would have preferred the lighter one to be slightly more precise. The menu system is easy to access, and I could guess what many of the items did before delving into the manual.

The receiver does seem to have good sensitivity. On 50MHz I used it to listen to a beacon which is marginal at my QTH. Comparing the IC-703 with my other 6m band receivers I found it to have quite acceptable performance, and I would have been happy to use it for DX work on this band.

I was then ready to do some transmitting, so I thought it was time to open the manual and have a read. The description of getting started all seemed a bit long-winded, but would probably be quite helpful for an absolute newcomer.

Anyway, I soon found how to adjust the microphone gain and audio compression level for my voice (the initial settings were, in fact, just right). I also learnt how to use the automatic a.t.u. (a.a.t.u.), which was simple: just press the button! I was soon enjoying a string of QSOs on 14MHz s.s.b. and away I went. Various menu settings allow the keyer to be configured for personal preference.

The quality of the transmitted audio sounded good to me (I recorded this on a separate receiver). I also received several complementary reports of the audio quality from the stations I worked. The speech compressor provided a worthwhile increase in signal 'punch' without degrading the quality of the sound.

Using CW
Next, turning to c.w., where the full potential of QRP is to be realised, I found the rig to be quite capable. One of the optional c.w. filters would be necessary for serious c.w. operating, though, the options being 500 or 250Hz.

The built-in iambic keyer is very easy to use, I just plugged in my paddle and away I went. Various menu settings allow the keyer to be configured for personal preference.

It's even possible to set it to use the Up and Down buttons on the microphone in place of a paddle key! To my surprise I found this moderately easy to use, and it would be useful in an emergency, maybe, if operating portable without a key.

Either full or semi break-in, with adjustable delay, is available. The full break-in works well, and I could 'hear between the dots' when sending at speeds up to about 20w.p.m. However, I was surprised to find that relays are used for the transmit-receive switching. And although they're not loud, I found the constant clattering quite distracting (I suppose I wouldn't have noticed it had I been using headphones). But the semi break-in, with a short delay time, suited my operating style nicely.

The c.w. keyer also features three message memories. These are not loaded with a message using your key, but by a fairly complex operation using the menus.

Having programmed-in your three messages, it's then easy to send them with a single button press. One of the three messages can be used to send a report and contest serial number, which automatically increments each time it's sent.

This is all very clever, but I think it would only be useful for rather casual contest operating.

For serious contesting, automation of serial numbers, etc., is bound to be done by your logging software running on a PC. Interfacing this sort of thing with the IC-703 is enabled by its Icom standard CI-V computer interface (an optional level converter is needed to connect it to a RS-232 port on the computer).

The FM Mode
The f.m. mode, while not essential for h.f. operation, is properly supported by this transceiver. It has a 3T/SSB tone encoder and decoder, as used to access many v.h.f. repeaters.

The transmit frequency offset for a repeater has to be set using the split function, and then the combination can be stored in a memory, complete with the tone frequency. It seemed a bit odd to find all this in a transceiver without 144 or 433MHz capability.

Tuning & Controls
The main tuning dial is smooth, and in s.s.b. and c.w., a 10Hz tuning step
chose 5kHz), the split can be set
up through the bands 60m
frequencies and when switching
one of the experimental 5MHz
appears in the sequence at the
quarter-speed slow tuning rate.

A nice feature (which I didn't
see mentioned in the manual)...is
that if you spin the dial fast
enough it switches to a quicker
tuning rate to rapidly QSY. Band
Up/Down buttons move
sequentially through all the
Amateur bands from 1.8 to
50MHz.

The buttons also select the
general coverage receiver, which
appears in the sequence at the
appropriate position, depending
on the frequency that you last
left it. For example, I tuned it to
one of the experimental 5MHz
frequencies and when switching
up through the bands 60m
appeared between 3.5 and 7MHz
(but of course the rig cannot
transmit on 5MHz).

There are two v.f.o.s on the
IC-703 with the usual ability to
operate 'split' (transmitting on
one and receiving on the other).
Although setting up the split
frequencies is easy on the IC-703,
I particularly liked the 'quick-
split function'.

Having previously defined a
split offset via a menu setting (I
chose 5kHz), the split can be set
up practically instantly by
pressing the SPL key, assuming
you have the right menu
showing at the time. So, if you
are waiting to get through a pile-
up when the DX station
suddenly says 'I'm going split -
listening 5 up'....you can be first
in the queue on his new receive
frequency. (You and all the other
IC-703 owners, of course!)

Memory Channels
The IC-703 has 99 memory
channels, and I found them very
easy to set and to use. Frequency
and mode are stored, and if split
operation is selected, the
independent transmit and
receive frequencies are stored.

There are three further pairs
of memories that can be used to
store scan edges. As well as v.f.o.
scanning, a scan through
memory channels is easy to run,
with individual channels skipped
from the scan if desired. All the
usual scan options are available,
utilising the all-mode squelch to
search for a busy channel, for
example.

In addition to the 99
memories, there's also 'memo
pad', in which a single button
press stores the current
frequency and mode in a rotating
bank of five memories (it can be
increased to ten via a menu
setting). This is very handy when
tuning the band in the 'search
and pounce' mode, when you
hear a station who you want to
work, but who is busy or has too
many callers. All you do is pop
the frequency in the memo pad
and come back to it later.

Portable Power
As I mentioned before, the
IC-703 is predominantly a portable
rig and can operate on a supply
voltage between 9 and 15V.
Because of this flexibility a
variety of battery supplies would
be suitable.

Icom offer a 9.6V 2.8AH
NiCad pack as an option, and I
found this to be effective. I didn't
operate long enough to flatten
this battery between charges, but
I would expect a few hours
operation to be possible at
normal transmit/receive time
ratios.

When the rig detects that its
supply voltage is 9.6V, or
anything below about 11V in
fact, a range of power-saving
features switch in automatically.
The maximum output power
drops to 5W and the backlight of
the main l.c.d. display switches
off when no control has been
touched for a few seconds.

Other power saving features
can be selected by the menus,
including a Power Saver when
you're receiving with the squelch
enabled (it's similar to this kind of
function found in v.f.h.s. hand-
helds).

When operating from a 9.6V
supply, I measured the current
consumption to be about 300mA
when receiving a signal at a
comfortable audio level, and 1.7A
for 5W continuous power output
(rather less on average in s.s.b.
use, of course).

In fact, the figures I've quoted
are quite low compared with
many amp-guzzling radios. This
suggests that considerable
design effort has gone into
optimising the IC-703 for battery
use.

Unexpected Extras
Now on to some of the 'extras'
that are featured in this
transceiver which you might not
expect in a basic modestly-priced
rig. And I'll start with the i.f.
shift control.

The control enables the i.f.
pass band to be moved up and
down in frequency when s.s.b. or
c.w. modes are used. This can be
useful to avoid problems from
strong signals on adjacent
frequencies. In c.w. use, since I
didn't have one of the optional
narrow filters, I found this shift
control very useful to eliminate
other c.w. signals nearby the one
I was listening to.

The other 'extra' - the DSP -
provides just two functions: On
s.s.b. an automatic notch filter
can easily be enabled that
searches for constant tones and
notches them out. Thus
distortions from extraneous
sources can be eliminated, and I
found that it works well.

When you're using s.s.b. or
c.w., the DSP noise reduction can
be switched in. This removes
much of the noise content of the
audio signal, and certainly
provides a marked change to the
quality of the sound.

In use...with many s.s.b.
signals of modest strength (when
there's a significant background
noise level) I found the facility
definitely makes the speech
sound as though it has better
fidelity. But whether or not it
made it more intelligible...I'm not
sure. I found many signals that
the noise reduction made 'nicer'
to listen to, but despite trying
hard...I couldn't find any signal
that became readable with the
noise reduction, but unreadable
without it.

Another 'extra'...the a.a.t.u. is
a very useful device to have
built in to the rig, especially for
portable use when it's necessary
to sling up a temporary antenna.
But remember...it's not designed
to match a very wide range of
impedances, so you can't just
plug in a random length wire
and expect to get a match on all
bands.

However, although Icom offer
an optional external a.a.t.u. with
a wide range capability, the
internal one is specified as being
able to match loads up to a
v.s.w.r. of 5:1 (a little less on
50MHz). And to see what this
means in practice, I first put up a
dipole cut for 14MHz.

The a.a.t.u. easily matched
the antenna not only on 14MHz,
but also on 7, 18 and 21MHz too!
Of course, just because a match
is achieved doesn't mean that
power is effectively coupled to
the antenna, nor that the
antenna is efficient. But it's a
start. Next I tried the a.a.t.u. on
my dipole cut for 7MHz. To my
surprise it could match this on
all nine bands 1.8 to 28MHz.
Data Modes
Data modes are well provided for, although I was not able to test these functions in the time available. The RTTY mode seems well thought out and it should be easy to connect to a terminal unit. I was surprised to find the facility for connecting a TNC for packet operation at not only 1200 baud, but also 9600 baud, the bandwidth of which must surely be out of the question on the h.f. bands. (Perhaps it’s intended for operation with a transverter for v.h.f. or u.h.f., although this would seem to go quite against the all-in-one nature of the IC-703).

Instruction Manual
The instruction manual provided with the transceiver is far from optimum, in my opinion. There’s a lot of repetition, and finding out about the operation of a specific function can take a lot of searching. There is no index, which would have helped to resolve this. However, the most serious fault is that the manual contains a number of errors. Different modes of operating are covered in sections such as ‘Operating FM’, under which all the main features for this mode are explained. But, for example, on this page it lists “convenient functions for receive” including i.f. shift, noise reduction and auto notch filter. But in fact...none of these are available when operating f.m., as is made quite clear elsewhere in the manual!

On almost every mode covered, there’s a description of one or more features that are not actually available in that mode.

Icom UK reply to comments on the IC-703
made by Neil Taylor G4HLX

Dear PW - Thanks for the positive and thorough review of our latest rig and the opportunity to respond to some of the issues raised in the review. The reviewer states that there is no index in the handbook. We would like to point out that...when I powered it up for the first time I was at once surprised...it didn’t have a ‘small rig’ feel or sound....as a complete all-in-one portable h.f./50MHz rig, the IC-703 has a lot to recommend it...I have to admit to being most surprised at how much I admired one of the optional accessories for the IC-703...the carrying bag! It’s an extremely well thought-out backpack-style bag.

Pros: "the manual contains a number of errors...". "The omission of v.h.f./u.h.f. capability, while understandable in a rig of this size, is the only aspect that may lead a new Foundation Licence holder to consider the alternatives".

Cons: "the manual contains a number of errors...". "The omission of v.h.f./u.h.f. capability, while understandable in a rig of this size, is the only aspect that may lead a new Foundation Licence holder to consider the alternatives".

Summary
"The IC-703 easily-portable transceiver is bound to look attractive to those who wish to take their Amateur Radio beyond the shack and the car....it will also find a home in the shack of a QRP enthusiast".

Icom UK Ltd.,
Sea Street, Herne Bay, Kent CT6 8LD.
Tel: (01227) 741741
Fax: (01227) 741742